

l. c. and subsequent authors, in part.—VIRGINIA: Norfolk, *Dana*. FLORIDA: low fertile ground near Jacksonville, June 18, 1898, *A. H. Curtiss*, no. 6420 (TYPE, in Gray Herb.); moist places, near Eustis, May, 1894, *G. V. Nash*, no. 838. TEXAS: (“*floribus albis*”) Houston, June 1843, *Lindheimer*. A specimen from dry hillsides and woods, Alexandria, La., May 31, 1899, *C. R. Ball*, no. 514, is intermediate between this variety and the typical form.

THE REPRESENTATIVES OF *TRISETUM SPICATUM* IN EASTERN AMERICA.

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TRISETUM SPICATUM (L.) Richter, var. ***pilosiglume***, n. var., culmis densissime tomentosis 1.5–5 dm. altis; foliis plus minusve pilosis, vaginibus tomentosis, pilis reflexis; paniculis plerumque argenteo-viridibus rare subviolaceis deinde albido-brunneis 2–7 cm. longis valde interruptis; spiculis 2–3-floris; glumis pilosis, inferiore lanceolato-attenuata 3.5–4 mm. longa, superiore ovato-lanceolata subaristata 3.5–4.7 mm. longa; lemmatibus 4.6–6.3 mm. longis lanceolatis apice laciniis setiformibus valde bipartitis; palea lemmate paullo brevioribus apice laciniis setiformibus valde bipartita.

Culms densely tomentose, 1.5–5 dm. high: leaves more or less pilose: the sheaths tomentose with reflexed hairs: panicles mostly silvery-green, rarely somewhat violaceous, finally whitish-brown, 2–7 cm. long, obviously interrupted: spikelets 2–3-flowered: glumes pilose; the lower lance-attenuate, 3.5–4 mm. long; the upper ovate-lanceolate, subaristate, 3.5–4.7 mm. long: lemmas 4.6–6.3 mm. long, lanceolate, obviously 2-cleft at apex into setiform segments: palea a little shorter than the lemma, its apex 2-parted like the lemma.—Labrador and Newfoundland to northern New England and Ontario. LABRADOR: Rama, August 20–24, 1897, *J. D. Sornborger*, no. 240, in part; Okkak or Hebron, 1853, *Moravian Bros.*; Hopedale, August 4–6, 1897, *Sornborger*, no. 241; limestone and calcareous sandstone terraces, Blanc Sablon, August 1, 1910, *Fernald & Wiegand*, no. 2,569. NEWFOUNDLAND: island off Pike’s Arm, July 19, 1911, *Fernald, Wiegand & Bartram*, no. 4,593 (TYPE in Gray Herb.); rocks, Black Island, July 20, 1911, *Fernald, Wiegand & Bartram*, no. 4,594; dry sea-cliffs, Tilt Cove, August 20, 1911, *Fernald, Wiegand & Darlington*, no. 2,568; dry limestone barrens, upper slopes and tablelands, alt. 200–300 m.,

Table Mountain, Port à Port Bay, August 16, 1910, *Fernald, Wiegand & Kittredge*, no. 2,571, July 16 & 17, 1914, *Fernald & St. John*, no. 10,780^a. QUEBEC: damp calcareous rocks, Bradore, Saguenay Co., August 4, 1910, *Fernald & Wiegand*, no. 2,570; dry turf, Pointe à Peau, Brest, Saguenay Co., July 31, 1915, *St. John*, Herb. Geol. Surv. Can.; limestone detritus, near crest of Cap Barré, Percé, August 1, 1907, and cold northerly calcareous walls of Grande Coupe, Percé, August 5, 1907, *Fernald & Collins*, nos. 867, 868; on hornblende schist or in alluvium of an alpine brook, Allen's Ravine, north slope of Mt. Albert, July 26 & 28, 1906, *Fernald & Collins*, no. 401; crevices of limestone-conglomerate, north side of Cap Enragé, Bic, July 24, 1907, *Fernald & Collins*, no. 866. ONTARIO: exposed places, Red Rocks, Lake Superior, June 26, 1884, *J. Macoun*. MAINE: slide, west wall of North Basin, Mt. Katahdin, July 13, 1900, *Fernald*. NEW HAMPSHIRE: "in alpinis, cum *Oxyria*," White Mountains, *E. Tuckerman*; Mt. Washington, July 3, 1878 and July 29, 1887, *Faxon*; damp slopes, Alpine Garden, Mt. Washington, July 10, 1895 and August 7, 1896, *E. F. Williams*, August 19, 1907, *A. S. Pease*, no. 10,601; Bigelow Lawn, Mt. Washington, September 1, 1877, *Faxon*; Great Gulf, Mt. Washington, August, 1877, and September 1, 1877, *Faxon*, August 30, 1910, *A. S. Pease*, no. 12,884; on the "Fan," Huntington's Ravine, August 28, 1912, *A. S. Pease*, no. 13,897. VERMONT: Smuggler's Notch, July 5, 1897, *J. R. Churchill* (mixed with var. *molle*); "in rupestribus siccis umbrosis ad Colchester," *Wm. Oakes*.

In its pilose glumes unique in the maze of plants which pass undistinguished as *Trisetum spicatum*. In its comparatively small spikelets and interrupted inflorescence somewhat intermediate between the more arctic-alpine *T. spicatum*, var. *Maidenii* (Gandoger)¹ and *T. spicatum*, var. *molle* (Michx.) Piper.

True *Trisetum spicatum* of Europe, based upon *Aira spicata* L. Sp. Pl. i. 64 (1753), is apparently not found in northeastern America, though some Arctic and northwestern specimens may belong to it. The alpine plant of Europe, as shown by many specimens and descriptions as well as by such plates as those of Hallier,² Hartinger³ or Correvon,⁴ is a low plant (0.5–2 dm. high), with sheaths and leaf-blades either pubescent or glabrous; the inflorescence cylindrical to obovoid, violet, bronze or brownish, very dense and spike-like, 1.5–3 cm. long,

¹ *TRISETUM SPICATUM* (L.) Richter, var. **Maidenii** (Gandoger), n. comb. *T. subspicatum*, f. *Maidenii* Gandoger, Bull. Soc. Bot. France, xlix. 182 (1902) *T. Maidenii* Gandoger, l. c. (1902).

² Hallier, Fl. von Deutschl. ed. 5, vii. t. 614 (1881).

³ Hartinger & Della Torre, Atl. Alpenfl. iv. t. 428 (1884).

⁴ Correvon, Atl. Fl. Alp. v. 471 (1901).

1–2 cm. thick (including the wide-spreading awns). In fact, the inflorescence is so very dense as to suggest, at first glance, that of *Phleum alpinum* or an *Alopecurus*; and it is noteworthy that an exceptionally discriminating New England botanist, long familiar in the field with the American var. *molle*, has placed in the Gray Herbarium a fine sheet of typical *T. spicatum* collected by himself on a mountain-summit of Salzburg, numbered and carefully labeled, but with no indication of even the generic name of the grass, which to his New England eyes seemed quite strange! In this typical *T. spicatum* the elliptic-lanceolate brown-edged smooth or merely scabrous-nerved glumes are acute or sometimes very slightly aristate, the upper 4–5 mm. long; the attenuate soft lemmas are 3–4 mm. long, slightly 2-cleft but scarcely aristate, and the palea is usually blunt and fimbriate at summit.

In Greenland and other regions of Arctic American and to some extent in northernmost Eurasia, the low plant with very dense inflorescence gives way to var. *Maidenii*, which is taller (1.5–3.5 dm. high) and with a looser interrupted inflorescence 2–6.5 cm. long, which has spikelets as in typical *T. spicatum* but with the glumes, lemmas and often the paleas more definitely aristate-tipped. This Arctic American representative of the species is apparently less common south of Greenland than var. *pilosiglume*, but it occurs on the Torngat Mts. of northeastern Labrador, and very locally south to the mountains of Newfoundland, and the Mingan Islands and the mountains of Gaspé County, Quebec.

In more temperate areas, of the Canadian and Transition regions, we get var. *molle* (Michx.) Piper,¹ which is based upon *Avena mollis* Michx.,² a plant originally collected at Montreal. This plant in its typical development seems specifically distinct from *T. spicatum* of Europe, but through var. *Maidenii* and again through var. *pilosiglume* the series seems to merge and, until the complex which is passing in many regions as *T. spicatum* is more thoroughly studied, it is well to consider it an extreme variation. Var. *molle* is a tall slender plant, the culms 2–8 dm. high, bearing silvery-green, finally whitish-brown, much interrupted panicles 2.5–11 cm. long. Its spikelets are commonly larger than in our other varieties, the 2nd. glume 4.5–6.5 mm. long, and the glumes, the deeply 2-cleft lemmas and commonly the

¹ Piper, Contrib. U. S. Nat. Herb. xi. 125 (1906).

² Michx. Fl. Bor-Am. i. 72 (1803).

deeply 2-cleft attenuate paleas are obviously awn-tipped. This plant, which may deserve specific reinstatement, but which seems to pass directly into the other varieties, does not occur in the bleaker habitats nor the more northern regions, like the headlands of Newfoundland and the coast of Labrador, where the others are found. Geographically, it is decidedly more southern: known in Newfoundland only along the sheltered river-banks; and on the mainland extending from Rimouski Co., Quebec, westward across the continent, south very generally on ledgy shores or slopes through northern and western New England and north-central New York, and locally to the Carolina mountains.

GRAY HERBARIUM.

ON THE MENDELIAN INTERPRETATION OF OENOTHERA CROSSES.

R. RUGGLES GATES.

IN a recent review of my book on Mutations,¹ East² takes occasion to repeat certain criticisms of the *Oenothera* work which have been reiterated in recent years with rather tiresome frequency. This criticism is to the effect that since it is known that in the *Oenotheras* a considerable percentage of the pollen grains, eggs and embryos frequently fail to develop, therefore it is impossible to draw any conclusions whatever from the abundant crossing experiments that have been made in this genus; unless, perchance the result happens (as it occasionally does) to be Mendelian. In the case of East, we are further assured that "no single fact discovered by those who have made pedigree cultures of the group, precludes a Mendelian interpretation." I venture to think that such a statement would only be made by one who had allowed his bias to outrun his discretion. It would further, I think, scarcely have been made if its author had first attempted to apply his idea to an explanation of the known facts.

¹ Gates, R. Ruggles, 1915. *The Mutation Factor in Evolution*, with particular reference to *Oenothera*. London: MacMillan. pp. xiv + 353, figs. 114.

² East, E. M. 1915. *RHODORA* 17: 235-237.